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CONFIDENTIAL FEBRUARY 21, 1992
USEPA COMMENTS ON THE
HEALTH AND SAFETY PLAN,
QUALITY ASSURANCE PROJECT PLAN,
AND FIELD SAMPLING PLAN

ENVIRO-CHEM SITE
ZIONSVILLE, INDIANA

**DISPOSITION OF FEBRUARY 21, 1992 USEPA COMMENTS
ON THE
HEALTH AND SAFETY PLAN,
QUALITY ASSURANCE PROJECT PLAN,
AND FIELD SAMPLING PLAN**

**ENVIRO-CHEM SITE
ZIONSVILLE, INDIANA**

MARCH 24, 1992

PREPARED FOR:

ENVIRO-CHEM TRUSTEES

PREPARED BY:

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PROJECT NO. 91104**

**DISPOSITION OF FEBRUARY 21, 1992 USEPA COMMENTS
ON THE HEALTH AND SAFETY PLAN
QUALITY ASSURANCE PROJECT PLAN, AND FIELD SAMPLING PLAN**

**ENVIRO-CHEM SITE
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Note: The U.S Environmental Protection Agency's (USEPA's) comments are typed in bold.

Health and Safety Plan (HSP)

1. **What is the expected duration of this project? This must be included in the HSP.**

Response:

An estimate of the duration of the project was added to Section 1.0 of the HSP.

2. **Section 1.0, page 1-1: The Consent Decree is not an "Administrative Order by Consent".**

Response:

The words "Administrative Order by Consent" were removed from Section 1.0 of the HSP.

3. **Section 1.0, page 1-2: Change the word "lodged" in the third line to "entered". The Consent Decree was "lodged" on March 21, 1991 and was "entered" on September 10, 1991. Mention the ROD Amendment of June 7, 1991. At the bottom of the page, there is a discussion of contractor-prepared HSP(s). It is not indicated in the HSP whether these will be submitted to EPA and IDEM; however, the QAPP, page 1-3 says that "the remediation contractor(s) will prepare and submit for USEPA's and IDEM's approval, one or more QAPPs and HSPs for construction and operation activities..."**

Response:

The references to the Consent Decree and the ROD Amendment were changed as requested. A statement indicating that the contractors' HSPs will be submitted to the USEPA and the Indiana Department of Environmental Management (IDEM) for review was added to Section 1.0.

4. **Page 2-1: Who are the "Project Safety Officer" and the "On-Site Project Safety Officer" relative to the "Health and Safety Officer" referred to in Section 1560 of the specifications? Also, EPA does not "approve" HSPs. Modifications to the HSP may be submitted to EPA for review and comment.**

Response:

The specifications have been made consistent with the HSP in regard to the Project Safety Officer (PSO) and On-Site PSO. Section 2.1 of the HSP was changed to state that any HSP modifications will be reviewed, rather than approved, by the USEPA and IDEM.

5. **Chloroform, methylene chloride, tetrachloroethylene, and trichloroethylene are all suspected carcinogens and should be so noted in the HSP. Also, to comply with the hazard analysis, the signs and symptoms of exposure to the chemicals at the site must be included in the HSP. MSDSs are excellent for this purpose.**

Response:

Table 3-2, which was inadvertently omitted from the final copies of the HSP, lists these compounds as being carcinogens and also contains the signs and symptoms of exposure. This table has been included in Revision 2 of the HSP.

6. **Will any physiological monitoring be performed to determine heat stress? We recommend heart rate, body weight, and core temperature be monitored when conditions warrant.**

Response:

Section 3.2 of the HSP was modified to state that employees' heart rate and body weight will be monitored to control heat stress. Furthermore, the On-Site PSO may use a commercial heat stress monitor to help determine the necessity for and frequency of employee breaks. Core temperature will not be monitored, however, because it is not likely that the On-Site PSO would be trained to complete this procedure.

7. **Fatigue can be a contributing factor at Superfund sites. It should be included in the hazard analysis section. Also, what will the expected workday hours be?**

Response:

Section 3.2 of the HSP was modified to discuss fatigue and the expected workday hours at the site.

8. **Section 3.1, page 3-1: Table 3.2 is referred to in this section yet it is not included in the document.**

Response:

Table 3-2 was inadvertently omitted from the final copies of the HSP. It has been included in Revision 2.

9. **Section 3.1, page 3-2: Would upgrade to Level B protection be considered for collection of ground water samples? If so, a statement about the possible upgrade to Level B should be included.**

Response:

A statement regarding a possible upgrade to Level B has been added to Section 3.1 and Section 8.1, Respiratory Protection.

10. **Page 3-6: Under slips, trips, falls - the protective measure should be revised to read, "Personnel will be trained to follow proper techniques when working to minimize physical hazards." Accidents also happen to workers who are not in Levels B and C.**

Response:

This revision was made as requested.

11. **Page 3-6: Under noise - monitoring for noise should be conducted and when necessary, workers should be required to wear ear protection.**

Response:

The collection of water samples at the site will not cause any noise problems. However, Section 3.2 of the HSP was changed to indicate that the On-Site PSO will enforce any noise monitoring and/or ear protection requirements specified in the HSPs for other activities occurring simultaneously at the site.

12. **The HSP states ear protection will be made available. But without an Action Level to require their use, workers tend not to use them. OSHA 29 CFR 1910.95 requires a hearing conservation program for any noise in the workplace that equals or exceeds 85 dBA - 8 hr. TWA. Page 4-2 refers to heavy equipment at the site. Heavy equipment is often associated with excessive noise. How will it be determined if workers should wear hearing protection?**

Response:

See the response to Comment 11.

13. **If heavy equipment will be used at the site, it must be identified along with a hazard analyses of its usage.**

Response:

No heavy equipment will be used as part of the water sampling activities. See the response to Comment 11.

14. What other equipment will be used at the site?

Response:

The contractors' HSPs will address other equipment to be used at the site.

15. Page 6-1: Under Environmental Monitoring - Provisions for monitoring with combustible gas and oxygen meters in addition to organic vapors should be made, especially if water sampling activities correspond with intrusive operations. Proximity of the Northside Landfill and remedial activities on that site may create conditions that could affect environmental conditions on the Enviro-Chem site. Environmental monitoring and coordination of activities with safety personnel associated with the Northside Landfill site may be necessary.

Response:

A statement was added to Section 6.0 of the HSP indicating that the On-Site PSO will enforce any requirements in contractors' HSPs for any other activities occurring simultaneously with the water sampling (e.g., monitoring for oxygen). Furthermore, the On-Site PSO will coordinate with the PSO for the Northside Landfill (NSL), if necessary.

16. Site topography, layout, and weather conditions must be included in the emergency response plan. A detailed site map showing site zones should be included.

Response:

At the March 2, 1992 meeting with the USEPA, ERM-North Central, Inc. (ERM-North Central) asked Ms. Karen Vendl of the USEPA to provide clarification on the first sentence of this comment, since these items are not normally included in our emergency response plans. Ms. Susan Brown of ERM-North Central repeated this request during

a March 13, 1992 telephone conversation, yet received no response from Ms. Vendl. Therefore, the emergency response plan was not modified.

The establishment of site zones is described in Section 4.2 of the HSP. Because this HSP only covers water sampling activities, it will be the responsibility of the contractors to define the work zones for the remedial activities at the site. A statement describing the coordination with other contractor On-Site PSOs has been added to Section 4.2.

17. **The respiratory protection program in the HSP does not meet the minimum requirements in 29 CFR 1910.134.**

Response:

ERM-North Central is unsure what is meant by this comment, and received no clarification by the USEPA at our March 2, 1992 meeting. However, in response to this comment as well as Comment No. 9, Section 8.1 was expanded to include more information on the use of respirators as well as self-contained breathing apparatus. Furthermore, a copy of 29 CFR 1910.134 was added as an Appendix and referenced in the text of the HSP.

18. **Page 8-3: Tyvek coveralls are prescribed for protection during intrusive activities such as subsurface water sampling. Tyvek offers little protection for splash type hazards; instead, a coated Tyvek such as Saranex should be used.**

Response:

All references to Tyvek have been changed to Saranex.

19. **Appendix A: Table A-3 and Figure A-3 - The splash suit removal (see Level C and Level B protection and decontamination procedures) is not included in the decontamination procedure outlined for Level A here.**

Response:

Step 11 in Table A-3 and Figure A-3 indicates the removal of the "fully encapsulating suit," which is used instead of a splash suit for Level A protection.

Field Sampling Plan (FSP)

1. **Table of Contents: Section 7 (Sample Handling and Analysis) has been omitted from the Table of Contents.**

Response:

A Table of Contents page was inadvertently omitted from the final copies of the FSP. This page is included in Revision 2.

2. **Section 1.0, page 1-1: The Consent Decree is not an "Administrative Order by Consent".**

Response:

The phrase "Administrative Order by Consent" has been removed from the FSP.

3. **Section 2.1, page 2-1: NSL is no longer "an operating solid waste disposal facility".**

Response:

The reference to the NSL was changed to state "closed" rather than "operating."

4. **Section 2.1, page 2-2: The word "lodged" should be changed to "entered" in the first line. The Consent Decree was "lodged" on March 20, 1991 and was "entered" on September 10, 1991. Also, mention the ROD Amendment of June 7, 1991.**

Response:

These changes were made as requested.

5. **Section 2.2, page 2-3: The first paragraph refers to "a minimum of 1 foot of compacted native soil". Exhibit A says "highly impermeable native soil".**

Response:

The phrase "highly impermeable" was inserted before "native soil" in Section 2.2 of the FSP.

6. **Section 4.2, page 4-2: Eliminate all references to Figure 4-1, as well as Figure 4-1 itself. These sample locations will be selected by EPA and IDEM, based in part on hot spots identified during the operation of the soil vapor system. However, once these 20 samples are taken, how will the cap repair be accomplished?**

Response:

Figure 4-1 and references to it were removed from the FSP. Section 4.2 was changed to state that the sampling locations will be chosen by the USEPA and IDEM.

7. **Table 4-2: Are the number of samples listed on a per year basis or are they projected project totals? If they are project totals, the number of on-site subsurface wells is incorrect (5 are needed, counting the initial sampling event).**

Response:

The numbers listed on Table 4-2 are estimates for the project, as stated in footnote number 2 of that table. The column heading "No." under "Investigative Samples" refers to the number of sampling locations. Therefore, for on-site subsurface wells, the correct number of sampling locations is 4, because there will be 4 on-site wells.

8. **Section 4.3, page 4-3: The FSP proposes a procedure for determining "Applicable Subsurface and Surface Water Background Concentrations". Related to background samples, Exhibit A states "The exact procedure, location of samples, and schedule for collecting and analyzing the samples will be approved by EPA, after consultation with the State, prior to its implementation". We are in the process of evaluating the proposed procedure for determining background concentrations, and will have comments as soon as possible. In the meantime, we reserve the right to change the number of new wells shown in the first paragraph.**

Response:

No response is necessary.

9. **Figure 4-2: Why was the piezometer moved approximately 200 feet south of the location identified in Exhibit A of the Consent Decree? Also, why were the sand and gravel well and the till well located on the western side of ECC moved to the southeast from the location shown in Exhibit A?**

Response:

The position of the piezometer in Figure 4-2 (now Figure 4-1 in Revision 2) was corrected. The locations of the sand and gravel well and the till well were changed from the locations shown in Exhibit A to the Consent Decree to avoid installing these wells in the entrance road to the site. However, these wells are still in the general south/southeast position with respect to the remediation area shown in Exhibit A to the Consent Decree.

10. **Sections 4.3 and 4.4, pages 4-5 and 4-6: As discussed above, we are reserving comment on the procedure for determining background surface and subsurface water concentrations.**

Response:

No response is necessary.

11. **Section 6.1, page 6-2: Soil vapor samples shall be pulled through the charcoal or XAD tubes before going through the sampling pump to reduce the possibility of sample contamination.**

Response:

Section 6.1 was changed to state that the soil vapor will be pulled through the tubes before entering the sampling pumps.

12. **Section 6.1, all pages: MS/MSD and field replicate samples shall also be collected for the soil vapor analyses.**

Response:

Please refer to Quality Assurance Project Plan (QAPP) Comment number 10.

13. **Section 6.1: For extracted vapor, please address the precautions to be taken to ensure no breakthrough occurs during each sampling event.**

Response:

Section 6.1 was revised to state that Lancaster Laboratories will report if any breakthrough is observed in the vapor samples. If breakthrough does occur, the sampling rate and/or time of collection will be modified to avoid breakthrough in subsequent samples.

14. **Section 6.1: The spent activated charcoal tube and XAD-2 tube should be stored in a separate ziploc plastic bag.**

Response:

Section 6.1 of the FSP was revised to state that the spent tubes will be stored in separate "whirl pak" bags, which are sealable plastic bags that will be supplied by Lancaster Laboratories.

15. **Section 6.1, page 6-3: The individual soil vapor sample tubes shall be capped and then placed in capped test tubes. The test tubes shall then be stored in a new, clean paint can with charcoal loose in the bottom to protect the samples.**

Response:

Section 6.1 of the FSP was revised to state that the spent sample tubes will be sealed in "whirl pak" bags and then carefully placed in a large glass sample bottle with loose

charcoal in the bottom. These containers were chosen because they can be readily supplied by Lancaster Laboratories, and will provide a similar level of protection as requested by USEPA's comment.

16. **Section 6.2, page 6-4: Eliminate the reference to Figure 4-1.**

Response:

All references to Figure 4-1 were removed from the FSP.

17. **Section 6.3.1, page 6-5: Describe how the screen length will be determined in the off-site wells as was done for the on-site wells.**

Response:

Section 6.3.1 of the FSP was changed to state that a soil boring will be advanced next to each well location prior to well installation. The information from the borings will help the contractor determine the proper screen lengths.

18. **Section 6.3.1, page 6-6: Will the wells be installed before or after the cap is placed? If they are to be installed after cap placement, how will the cuttings be handled? Also, how can the locations of the investigative monitoring wells be based on the subsurface water elevation contours shown in Figure 6-6, when the contours on this figure do not even extend north of the concrete cap?**

Response:

Section 6.3.1 of the FSP was changed to state that the wells will be installed after the cap is in place and that the cuttings will be drummed and then disposed of at a hazardous waste facility.

Figure 6-6 and the reference to it were removed from the FSP.

19. **Section 6.3.1, page 6-7: The first paragraph states that a soil sample from the screened interval of each monitoring well will be analyzed for particle size**

distribution to determine hydraulic conductivity. This method is considered most reliable in homogeneous sediments. Its reliable application for determining hydraulic conductivities of the heterogenous till and sand/gravel at the site is questionable.

Response:

These data are being obtained for determining hydraulic conductivity at each well, where either till or sand and gravel will be screened.

20. Section 6.3.1, page 6-7: How will the depth to the sand and gravel aquifer be determined so that the till wells will be screened at the proper depth?

Response:

Section 6.3.1 was revised to state that a soil boring will be advanced next to each till well location to determine the depth to the sand and gravel aquifer.

21. Section 6.3.1, page 6-7: The third paragraph states "...the formation will be allowed to collapse around the screen..." during well installation. This method is acceptable during screen placement in the sand and gravel only. The till monitoring well screens should be sand packed. This will aid in well development, reduce turbidity during sampling, and may increase permeability by preserving possible secondary soil structures which may exist in the till.

Response:

The third bullet on page 6-7 of Revision 1 of the FSP states that "If the formation does not collapse or fill the annular space to this level, clean silica sand will be added." Therefore, the till well screens would be sand packed because the till is not expected to collapse.

22. Section 6.3.2.2, page 6-10: Please specify that a new cotton cord will be used for each well measurement.

Response:

This change was made as requested.

23. **Section 6.3.2.4, page 6-12: Table 6-1 is cited as describing decontamination of sampling equipment between sampling. This table was not included in the document.**

Response:

Table 6-1 was inadvertently omitted from the final copies of the FSP. The table is included in Revision 2.

24. **Page 6-13: Change the first bullet to address the following:**

- * Address for all parameters**
- * Individual liter-size bottles should be used, instead of using one big bottle.**

Response:

During the March 2, 1992 meeting with the USEPA, ERM-North Central requested clarification of this comment. Ms. Karen Vendl of the USEPA indicated that she would try to obtain more information on the comment. During a March 13, 1992 telephone conversation with Ms. Vendl, Ms. Susan Brown of ERM-North Central repeated the request for clarification. Because no additional information was provided by Ms. Vendl, no change was made to the FSP regarding this comment. The bullets being referred to indicate that the collection of duplicate water samples will require obtaining double the normal sample volume in a large container, and then pouring the samples into the proper sample bottles for shipment to the laboratory. This procedure does not apply to any samples collected for volatile organics analyses.

25. **Page 6-14: It is stated on page 6-14 that no MS/MSD samples are required for organics because CLP SOW OLC01.0 does not require the analysis of MS/MSD. This statement is inaccurate. It is true that CLP SOW OLC01.1 does not require**

the analysis of MS/MSD because they are substituted with one laboratory control sample (LCS) and one performance evaluation (PE) sample. For PRP-lead projects, the Agency does not provide the PE sample. Therefore, MS/MSD samples are required for this project.

Response:

The Contract Laboratory Program (CLP) Statement of Work (SOW) OLC01.0 does not provide any information for performing matrix spike/matrix spike duplicate (MS/MSD) analysis. However, because the USEPA is requesting the collection and analysis of MS/MSD samples in accordance with this SOW, CompuChem Laboratories has written a modification to the SOW to allow for MS/MSD analysis (see Appendix A.8 of the revised QAPP). Essentially, CompuChem will use the MS/MSD protocol from the CLP SOW OLM01.0. The FSP has been revised to require the collection of MS/MSD samples for the analysis of organics in water.

26. **Table 7-1: The chromium VI analysis has a 24 hr holding time associated with it, and the samples are not preserved in nitric acid. Also, Appendix B.2. of the Quality Assurance Project Plan (EMS Heritage Laboratories, Inc. Hexavalent Chromium Standard Operating Procedure) indicates that the samples are to be unfiltered. Collection and preservation procedures should be compatible with the SOP used to analyze the samples.**

Response:

Table 7-1 of the FSP was changed to require a 24-hour holding time for chromium VI samples with no nitric acid added to the samples. The Standard Operating Procedure (SOP) in Appendix B.2 of the QAPP has been revised to state that subsurface water samples will be filtered, and surface water samples will not be filtered.

27. **Table 7-1: Also in Table 7-1, please make the corrections shown on the Appendix I to this document.**

Response:

These changes were made as requested.

28. **Table 7-1: Footnote 1 to Table 7-1 should be revised to state that the technical holding times are from the date of sample collection.**

Response:

This change was made as requested.

29. **Table 7-1: For soil vapor, if both XAD-7 resin or activated carbon tubes are to be used for different parameters (e.g., 1,1-DCA vs. other volatile organics), they should be listed separately.**

Response:

This change was made as requested.

30. **Table 7-1: Table 3-1 of the QAPP says that soil vapor will be tested for phenol as well; yet phenol is not included on Table 7-1 of the FSP. Please specify what sorbent will be used for this purpose, and the preservation and holding time requirements.**

Response:

The requested information was added to Table 7-1 of the FSP.

Quality Assurance Project Plan (QAPP)

1. **Section 1.1, page 1-1: In the first paragraph, the Consent Decree is not an "Administrative Order by Consent". In this section, please describe soil sampling, grain size distribution, water level measurements, soil vapor sampling, and organic carbon content analysis as discussed in the Field Sampling Plan.**

Response:

The phrase "Administrative Order by Consent" was removed from the QAPP. A brief description of the sampling activities was added to Section 1.1 of the QAPP.

2. **Section 1.1, page 1-3: It states that "The remediation contractor(s) will prepare and submit for USEPA's and IDEM's approval, one or more QAPPs and HSPs for the construction and operation activities..." This is not consistent with the specifications and the HSP.**

Response:

Section 1.1 of the QAPP, the specifications, and the HSP were changed to state that the USEPA and IDEM will only review, not approve, the HSPs.

3. **Section 1.2.2, page 1-4: In the third paragraph, change "lodged" to "entered". Also, mention the ROD Amendment of June 7, 1991.**

Response:

The changes were made as requested.

4. **Section 1.2.3, pages 1-5 and 1-6: What does the sentence mean that ends on the top of page 1-6? Also, at the bottom of page 1-6, and throughout the documents, please add "to the Consent Decree" after Exhibit A.**

Response:

The sentence referred to in this comment was copied directly from the Remedial Action Master Plan for the Enviro-Chem site. Because ERM-North Central did not write this sentence, we are reluctant to change it. We assume that it means that the subsurface water gradient is towards the creek, because the creek is fed by subsurface water.

The phrase "to the Consent Decree" has been added after "Exhibit A" in the HSP, FSP, and QAPP.

5. **Table 1-2: The number and frequency of field QA/QC samples is inadequate and does not consistently agree with statements in the text (e.g., Subsection 3.1 calls for MS/MSD samples for organic soil analyses, but no such analyses are indicated in Table 1-2). Field QA/QC samples shall be collected at a frequency of 1 per 10 samples, and at least one set of QA/QC samples should be collected for each set of samples submitted. This means that even if only a single sample is to be analyzed, a field duplicate, field blank, and MS/MSD sample should be analyzed.**

Response:

Table 1-2 of the QAPP is a summary of samples to be collected. Therefore, samples that do not require extra sample volume for MS/MSD analysis, such as soil and vapor, do not have numbers under the MS/MSD column (see footnotes 4 and 5 of the table). Furthermore, MS/MSD samples will only be collected at a frequency of one per 20 samples (as previously agreed to by the USEPA), but all other Quality Assurance/Quality Control (QA/QC) samples will be collected at a frequency of one per group of 10 or fewer investigative samples.

At the March 2, 1992 meeting, Ms. Karen Vendl of the USEPA agreed that because the vapor samples will not be used to demonstrate that soil clean-up objectives have been met the corresponding QA/QC samples will not need to be collected or analyzed whenever only one sample is collected at the site.

6. **Tables 1-6 and 1-7: Why are Aroclor 1232 and Aroclor 1260 shown in these tables? The Acceptable Subsurface Water Concentration of 0.0045 ug/l is for the sum of all PCBs present.**

Response:

The Aroclors in Tables 1-6 and 1-7 in the QAPP were changed to "PCBs."

7. **Table 1-8: For "Field Ambient Air", the intended use should also include determining that off-site migration of contaminants (as determined by appropriate regulations) does not occur during construction activities.**

Response:

Field ambient air sampling will be included in an air quality specification, which will be addressed by the contractor(s) at the site.

8. **Figure 1-3: The Consent Decree provided 3 months for preparation of plans and specifications, not 4 months as indicated in this figure. Also, on the schedule, the operation of the SVE system appears to be somehow linked to the availability of the NSL pipeline. Explain the relevance of this. Also, at the bottom of the page under "Plans and Specifications" there are listed 5 items. The "Restart Spike Procedure" is missing from the December 10 submittal.**

Response:

Figure 1-3 of the QAPP was changed to: (1) specify three months for the preparation of plans and specifications, (2) remove the link to the NSL pipeline, and (3) remove the reference to the Restart Spike Procedure. The Restart Spike Procedure is described in Exhibit A to the Consent Decree and in the FSP.

9. **Section 2.0: Please add the following to the "Project Organization and Responsibility" Section:**
- * identify the parties responsible for final data review and review of tentatively identified compounds (TICs)**

Response:

Exhibit A to the Consent Decree does not require the analysis of TICs. Unless the Consent Decree is changed with respect to this matter, the QAPP will not require the analysis of TICs.

- * include the Region V Central Regional Laboratory (CRL) in the project organization chart**

Response:

Figure 2-1 was modified to include the CRL.

- * identify the responsibilities of all three laboratories**

Response:

A reference to Table 1-3, which was included in Revision 1 of the QAPP and which lists the analyses to be performed by each laboratory, was added to Section 2.0, subheading "Laboratories' Project Managers."

- 10. Section 3.1, pages 3-1 to 3-3: In the Level of QC Effort Section, please address the following:**

- * There are conflicting statements in this section. On page 3-1, it states that MS/MSD samples will be designated/collected for organic soil analysis and 1,1-dichloroethane water analysis only, while on page 3-2, it states that no extra volume of soil needs to be collected for the MS/MSD samples for VOCs or extractable organic analysis. Please correct the discrepancy.**

Response:

Although matrix spikes will be performed for the soil organic analyses, no extra sample volume needs to be collected in the field for the MS/MSD. Therefore, the statements are not conflicting. Section 3.1 of the QAPP has been revised to try to make this clearer.

- * We agree that no duplicate samples will be collected for soil vapor analysis. However, we require that MS/MSD samples with blank tubes should be done for soil vapor analysis. Please address this.**

Response:

Revision 1 of the QAPP required that Lancaster laboratories would perform MS/MSD analysis using blank tubes, as described in Appendix C, Section 9. Section 3.1 of the QAPP has been clarified with respect to this matter.

- * **Other than soil vapor samples, field blank (for water sample only) and field duplicate samples should be collected, at a frequency of one per group of 10 or fewer investigative samples collected, for all parameters. Please revise the text throughout the QAPP and FSP, and related tables (e.g., Table 1-2 of QAPP and Table 4-2 of FSP).**

Response:

The QAPP has been revised to require duplicates and blanks for every 10 or fewer samples. However, please note that duplicates cannot be collected for soil vapor samples. Also, as noted in the footnotes of Table 1-2 of the QAPP and Table 4-2 of the FSP, the on- and off-site subsurface water samples are counted as one group for the determination of the required number of QA/QC samples.

11. **Table 3-1: Detection limits for many of the analytes are higher than the RA cleanup standards listed in Table 3-1 of the Consent Decree. Alternate methods to obtain the required detection limits must be specified.**

Response:

The following analytical procedures have been changed or added to the sampling program to achieve detection limits below the clean-up objectives:

- o SW-846 Method 8240 will be used instead of CLP SOW OLM01.0 for the analysis of volatile organics in soil.
- o CLP SOW OLM01.0 with a modified sample preparation (see Appendix A.8 of the QAPP) will be utilized instead of CLP SOW OLC01.0 for the analysis of semivolatiles in subsurface water, which will result in method detection limits (MDLs) lower than the clean-up objectives for these parameters.

- o The USEPA Method 200.8 (ICP-MS) will be used by IEA, Inc. to analyze for arsenic and antimony.

The QAPP has been revised to include these changes and the new detection limits that will be used for the affected parameters.

12. **Section 6.1.1, page 6-2: This subsection states that the calibration knob will be used to calibrate to the first and second pH buffer. If the knob is adjusted to calibrate to the second buffer, the calibration for the first buffer will be altered. The procedure must be revised.**

Response:

The calibration procedure in Section 6.1.1 has been changed to explain that two different knobs are used in the calibration.

13. **Section 6.1.1, page 6-3: Deionized water should be used to rinse electrode.**

Response:

This change was made as requested.

14. **Section 6.1.2, page 6-4: Deionized water should be used to rinse electrode. Delete 2nd and 3rd bullets. The distilled water to be used for field blank preparation should be tested prior to leaving the laboratory and not during field instrument calibration on site.**

Response:

The first change was made as requested. However, the water to be used for the preparation of the field blanks is tested by the supplier and will be checked in the field as a safety measure.

15. **Section 6.0, all pages: The calibration procedure for the personal sampling pump has been omitted from this section. Why?**

Response:

Because the contractor who will be performing the soil vapor sampling has not yet been selected, the exact type of pump to be used is not known at this time. The QAPP has been changed to state that the contractor that performs this sampling must submit a QAPP that addresses the calibration and operation of the sampling pump to the USEPA and IDEM for approval before collecting any samples.

16. **Section 7.0: Describe the method to be used to detect/quantify the low concentration contaminants in the presence of contaminants of high concentrations.**

Response:

CompuChem prepared a statement on this matter entitled "Minimization of Dilutions," which is included in Appendix A.8 of the QAPP.

17. **Section 7.0: Please note that CLP SOW OLM01.1 cannot achieve detection limits required for parameters listed in Table 1-6. SOP should be provided for that purpose.**

Response:

See the response to Comment 11.

18. **Section 9.0, page 9-1: A hard copy of all analytical data and supporting documentation shall be retained. Magnetic disks and tapes are insufficient. In addition, the following data packages are to be submitted to EPA and IDEM:**

* **data packages for all samples used to verify soil cleanup as specified in Section 4.2 of Exhibit A, including**

- **soil vapor samples from restart spike tests**

- on-site till well samples
- soil samples;
- * data packages for all background subsurface and background surface water samples used to modify the site-specific acceptable concentrations listed in Table 3-1 of Exhibit A as allowed by footnotes (2) and (4);
- * data packages for all samples collected for post soil cleanup compliance monitoring as prescribed in Section 4.3 of Exhibit A;

Data packages for all other samples collected should be retained in accordance with Section XV. of the Consent Decree.

Response:

As described in Section 5.3 of the QAPP, a hard copy of all project-related data and documentation will be kept in the project manager's files. Section 9.3 was revised to specify what data packages will be submitted to the USEPA and IDEM.

19. **Page 9-5: The raw data should include GC chromatogram and mass spectra.**

Response:

Section 9.3 of the QAPP was changed to indicate that the raw data will include the GC chromatogram and mass spectra.

20. **Section 11.0: The preventative maintenance of laboratory equipment was referenced to Appendices A.7, B, C, and D. However, the referenced appendices did not contain the information. Please provide the routine preventative maintenance, including schedule/frequency, for each laboratory. An example table is attached for your reference.**

Reference:

The preventative maintenance information was provided in Revision 1 of the QAPP in the following sections of the Appendices to the QAPP.

Appendix A.7 - Section 6.4,
Appendix B.1 - "Additional Information," Item #3,
Appendix C - Section 13, and
Appendix D - Item 10.

Please specify what is missing from these sections, if anything.

**21. Appendix A: SOP for the analysis of 1,1-DCA by CompuChem Laboratories, Inc.
Please address the following:**

- * This SOP is for the analysis and report of 1,1-DCA only. Please clarify whether the calibration standard will include all compounds listed in page 2 of the SOP or only the 1,1-DCA. NOTE: Although only the 1,1-DCA will be reported, the calibration mixture should include all compounds.**

Response:

The calibration mixture will contain all of the compounds listed in the SOP.

- * Please include the frequency of continuing calibration checks, including the concentration of the calibration standard to be used for this purpose. Please revise Section 6.2 of the SOP to specify the frequency of performing continuing calibration checks.**

Response:

Section 6.2 of the SOP has been revised regarding calibration.

- * Please include the concentration of the working matrix spike standard solution and the spike level to be used.**

Response:

Section 6.4 of the SOP has been revised regarding spike standards.

- * **The SOP should include the preparation/analysis of MS/MSD samples.**

Response:

Section 6.4 of the SOP has been revised regarding the preparation/analysis of MS/MSD samples.

- * **The QA/QC requirements section should include the acceptance control limits for the analysis of QC samples, including method blank, MS/MSD, and continuing calibration checks.**

Response:

Sections 6.2, 6.3, and 6.4 of the SOP have been revised to specify acceptance control limits for the QC samples.

- * **A section should be added to address the qualitative compound identification.
Note: A second column should be used for confirmation.**

Response:

Sections 5.5.3 and 5.5.4 of the revised SOP describe the primary and confirmation columns.

22. Appendix B: SOP for the analysis of chromium VI by EMS Heritage Laboratories, Inc.:

This SOP is developed based on the usage of Hach kit for the analysis of chromium VI. Hach kit is suitable for a quick screening in the field, and is not suitable for collecting data to support the remedial action. As a result, we will not comment further on this SOP. Instead, a SOP based on the extraction of chromium VI from water samples, and the extracted chromium VI analyzed using AA spectrometric method should be submitted for review.

Response:

The SOP in Appendix B of revision 1 of the QAPP is based on SW-846 Method 7196, a colorimetric method that specifies the use of a spectrophotometer. Although a Hach reagent is used, this method does not involve using just the Hach kit. Furthermore, EMS does not perform chromium VI analysis by using an AA method. According to EMS, Method 7196 is reliable, the easiest of the SW-846 Chromium VI methods to perform, and is less susceptible to common interferences. EMS also contacted other laboratories in the Indianapolis area, and none of them can analyze chromium VI by using an AA method. Therefore, the SOP for Chromium VI analysis was not changed.

23. Appendix C: SOPS for selected organics on charcoal tube by Lancaster Laboratories, Inc. Please address the following:

- * Please specify the method detection limit and dynamic working linear range in appropriate units.**

Response:

Appendix C of Revision 1 of the QAPP contains the requested information in the following tables:

- o Table 3 of Section 9 lists the results of the method detection limit (MDL) study calculated as ug/tube.
- o Table 2 of Section 9 lists the dynamic range for each compound as mg/tube and ppm (v/v) in air, assuming a 10 liter sample volume.
- o Table 9-1 (page 2 of Section 9) lists the estimated Limit of Quantitation (LOQ) calculated from the MDL and PQL (practical quantitation limit) listed in Table 3.

It is unclear whether the USEPA reviewer did not find this information or had a specific problem with the information given.

- * Please define 100 mg/50 mg charcoal tube. Does it consist of two separate sections each containing 100 mg and 50 mg of charcoal respectively?**

Response:

Page 2 of Section 6 of Appendix C to Revision 1 of the QAPP explains that the charcoal tubes have a 100 mg front section and a 50 mg back section. For this project, the two sections of each tube will be combined prior to analysis. Two tubes in series will be used for the sampling. For clarification, the SOP was revised to refer to the tubes as containing 150 mg of charcoal.

- * **Please describe how the spike of surrogate compound is done. Is it spiked into the activated charcoal or into the solvent (CS₂)? Note: It is not appropriate to spike the surrogate into the solvent because it will result in a false positive recovery.**

Response:

On page 7 of Section 9 of Appendix C to Revision 1 of the QAPP, it is explained that the surrogate spike is added to a vial containing both the charcoal and the solvent. Lancaster Laboratories has not had any problems with spiking in this matter.

- * **Please address the composition of the matrix spike standard solution and the concentration of each component, preparation of matrix spike samples (including the frequency).**

Response:

Section 9 of Appendix C was revised to more clearly explain the composition of the matrix spike standard and the preparation of spiked samples. The frequency of MS/MSD analysis, which was stated in the SOP in Revision 1 of the QAPP (Section 9), is one per group of 20 or fewer samples.

- * **On page 8 (Quality Control), please address the following:**
 - a. **It is stated that two unopened tubes will be spiked with approximately 0.1 mg and 0.3 mg per tube respectively. We do not know what the rationale is to spike two tubes with different amounts of spike compounds. Please explain.**

Response:

The 0.1 mg spike level refers to nonchlorinated compounds and the 0.3 mg level refers to chlorinated compounds. Section 9 of Appendix C to the QAPP was changed to explain this more clearly (pages 8 and 10 of 20).

- b. **If two tubes are spiked with two different amount of compounds, then please describe how the Relative Percent Difference (%RPD) between two spiked tubes is calculated.**

Response:

See response to the previous comment.

- c. **Please identify which GC column will be the primary column, and which will be the secondary (or confirmatory) column.**

Response:

Section 9 of Appendix C to the QAPP was revised to discuss the primary and confirmatory columns (page 9 of 20).

- d. **What precaution will be used to prevent breakthrough?**

Response:

Section 9 of Appendix C to the QAPP was revised to show how breakthrough will be identified by Lancaster Laboratories (page 10 of 20). If breakthrough is observed, the sampling personnel will adjust sampling rates and/or times to avoid breakthrough in subsequent samples.

- * **A section should be added to address the data deliverables (e.g., what the data package will consist of).**

Response:

A list of deliverables was included in Appendix A of Appendix C to Revision 1 of the QAPP.

24. SOP for analysis of phenol on XAD-7 tube by Lancaster Laboratories, Inc. Please address the following:

- * Please specify the method detection limit and dynamic working linear range in appropriate units.**

Response:

Table 9-1 in Appendix C to Revision 1 of the QAPP lists the estimated LQC, which is based on the MDL. Table 2 of Section 9 of Appendix C to Revision 1 of the QAPP lists the dynamic range for phenol as mg/tube and ppm (v/v) in air, assuming a 10 liter sample volume. Revision 2 of the QAPP also contains these tables.

- * Please define 100 mg/50 mg XAD-7 tube. Does it consist of two separate sections, each containing 100 mg and 50 mg of XAD-7 respectively?**

Response:

Sections 6 and 9 of Appendix C to Revision 1 of the QAPP explains that the tubes used for phenol analysis have a front section containing 100 mg of XAD-7 sorbant and a back section with 50 mg of sorbant. For this project, one tube will be used for the sampling, and the two sections of each tube will be analyzed separately to determine if breakthrough has occurred.

- * What precaution will be used to prevent breakthrough?**

Response:

Section 9 of Appendix C to the QAPP was revised to show how Lancaster will identify breakthrough (page 20 of 20). If breakthrough does occur, the sampling

personnel will adjust sampling rates and/or times to avoid breakthrough in subsequent samples.

- * **Please address the concentration of the matrix spike standard solution to be used.**

Response:

Section 9 of Appendix C to the QAPP was revised to describe the matrix spike standard solution more clearly (page 18 of 20).

- * **A section should be added to address the data deliverables (e.g., what the data package will consist of).**

Response:

A list of deliverables was included in Appendix A of Appendix C to Revision 1 of the QAPP.

25. **Appendix E: SOP for Particle Size Analysis. It is not clear whether this SOP is to be used to determine the particle size distribution or just particle size. Please address the following:**

- * **Please clarify whether the particle distribution or particle size is of interest. NOTE: If particle size determination is desired, then the particle size of interest should be specified, and the mesh of the screen to be used should be specified.**

Response:

Item 1 of the SOP in Revision 1 of the QAPP specified that the parameter of interest is particle size distribution. However, the title of the SOP has been revised to "Particle Size Distribution" to avoid any confusion.

- * **How will the analytical results be reported? Please add a section to address the reporting of analytical results. This will depend on whether particle size distribution or only one single particle size is to be determined.**

Response:

An example report has been added to the SOP.

- * **The limit of detection is specified to be 0.0%. This is meaningless without stating the particle size. Please revise it accordingly. The same correction should be made for the range of measurement.**

Response:

Since a limit of detection does not really apply to this analysis, the SOP was changed to say "not applicable" for Item 3.